

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A network device comprising:
a processor;
a first memory, wherein
 said processor and said first memory are coupled to one another;
a tunnel classification stage, wherein
 said processor is coupled to control said tunnel classification stage,
 said tunnel classification stage comprises
 a packet processing section comprising at least one processor,
 a security group identifier identification unit, coupled to said
 packet processing section, and
 a tunnel classification unit, coupled to said packet processing
 section and said security group identifier identification unit,
 said security group identifier is configured to identify a security group of a
 sender of said packet,
said security group is configured to represent a plurality of senders,
said plurality of senders comprises said sender, and
 said packet processing section is configured to
 classify a packet based, **at least in part,** on a security group
 identifier (SGI) of said packet, ~~forward said packet~~
 ~~through a tunnel via which said packet is to be~~
 ~~forwarded, and determine said tunnel using said SGI~~
 wherein
 said SGI identifies said security group,
 determine a routing of said packet, wherein
 said packet processing section is configured to
 determine said routing based, at least in part, on
 said SGI, and

said packet processing section is configured to
determine said routing by virtue of being
configured to identify a tunnel;
determine whether forwarding said packet via said tunnel is
permitted, wherein
said packet processing section is configured to
determine whether said forwarding is permitted
based, at least in part, on said SGI, and
forward said packet via said tunnel, if said forwarding said
packet via said tunnel is permitted.

2.-3. (Cancelled)

4. (Currently Amended) The network device of claim 1, wherein said packet processing section is further configured to forward said packet through said tunnel based, at least in part, on information in a header of said packet.

5. (Cancelled)

6. (Previously Presented) The network device of claim 1, wherein a single router comprises said tunnel classification stage.

7. (Previously Presented) The network device of claim 6, wherein said tunnel classification unit comprises:
a lookup unit.

8. (Previously Presented) The network device of claim 7, wherein said lookup unit comprises:
an access control list (ACL); and
a content-addressable memory, wherein

said content-addressable memory is configured to access said ACL by
 virtue of being configured to
 generate an index, and
 provide said index to said ACL.

9. (Previously Presented) The network device of claim 8, wherein
 said network device further comprises a memory,
 said ACL is stored in said memory,
 said content-addressable memory and said memory are coupled to one another,
 said ACL comprises a plurality of ACL entries (ACEs), and
 each of said ACEs comprises a tunnel identifier field and a security group
 identifier field.

10. (Currently Amended) A method comprising:
 assigning a security group identifier (SGI) to a packet, wherein
 said SGI is assigned based, at least in part, on a security group of a
 sender of said packet,
 said SGI identifies said security group,
 said security group is configured to represent a plurality of senders,
 and
 said plurality of senders comprises said sender;
 classifying said packet based, at least in part, on said SGI;
 determining a routing of said packet, wherein
 said determining said routing is based, at least in part, on said SGI, and
 said determining said routing comprises
 identifying a tunnel;
 determining whether forwarding said packet via said tunnel is permitted,
 wherein
 said determining whether said forwarding is permitted is based, at
 least in part, on said SGI; and

forwarding said packet via [[a]] said tunnel ~~identified by said routing~~, if said forwarding ~~a packet having said SGI~~ said packet via said tunnel is permitted.

11. **(Currently Amended)** The method of claim 10, ~~further comprising:~~ wherein

said determining whether said ~~packet can be sent via [[a]] tunnel forwarding is permitted is~~ based, at least in part, on a result of said classifying said packet.

12.-13. (Cancelled)

14. **(Currently Amended)** The method of claim 11, wherein said determining whether said forwarding is permitted comprises:

generating an index, wherein said index comprises said SGI; and using said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via [[a]] said tunnel.

15. (Original) The method of claim 14, wherein said information comprises: an SGI field; and a tunnel identifier field.

16. **(Currently Amended)** The method of claim 10, ~~further comprising:~~ wherein

said forwarding said packet comprises forwarding said packet from an ingress router to an egress router via [[a]] said tunnel.

17. (Original) The method of claim 16, further comprising: receiving said packet at said egress router; and determining whether said packet can be forwarded by said egress router based on said SGI.

18. **(Currently Amended)** The method of claim 17, wherein said determining whether said packet can be forwarded by said egress router further comprises:

determining whether said packet can be forwarded by said egress router based, at least in part, on said SGI, a destination of said packet, and an identifier of said tunnel.

19. **(Currently Amended)** The method of claim 17, wherein said determining whether said packet can be forwarded by said egress router further comprises:

generating an index into an access control list (ACL), wherein said ACL comprises information regarding whether said packet can be forwarded by said egress router, and
said index includes said identifier of said tunnel; and
accessing said ACL using said index.

20. **(Currently Amended)** A computer system comprising:
a processor;
computer readable storage medium coupled to said processor; and
computer code, encoded in said computer readable storage medium, configured to cause said processor to:
assign a security group identifier (SGI) to a packet, wherein
said SGI is assigned based, at least in part, on a security group of a sender of said packet,
said SGI identifies said security group,
said security group is configured to represent a plurality of senders, and
said plurality of senders comprises said sender;
generate a classification of said packet by virtue of being configured to classify said packet based, at least in part, on said SGI;

determine whether said packet can be sent via a tunnel based, at least in part, on said classification; and forward said packet via said tunnel, if said forwarding a packet having said SGI said packet via said tunnel is permitted.

21. (Cancelled)

22. (Previously Presented) The computer system of claim 20, wherein said computer code is further configured to cause said processor to:

determine a routing of said packet, wherein said classification is also based on said routing.

23. (Cancelled)

24. (Currently Amended) The computer system of claim 20, wherein said computer code configured to cause said processor to determine whether said packet can be sent via said tunnel is further configured to cause said processor to:

generate an index, wherein said index comprises said SGI; and use said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via [[a]] said tunnel.

25. (Original) The computer system of claim 24, wherein said information comprises:

an SGI field; and
a tunnel identifier field.

26. (Currently Amended) The computer system of claim 20, wherein said computer code is further configured to cause said processor to:

said forwarding said packet comprises forwarding ing said packet from an ingress router to an egress router via [[a]] said tunnel.

27. (Original) The computer system of claim 26, wherein said computer code is further configured to cause said processor to:

receive said packet at said egress router; and

determine whether said packet can be forwarded by said egress router based on said SGI.

28. (**Currently Amended**) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:

determine whether said packet can be forwarded by said egress router based, at least in part, on said SGI, a destination of said packet, and an identifier of said tunnel.

29. (Original) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:

generate an index into an access control list (ACL), wherein

said ACL comprises information regarding whether said packet can be forwarded by said egress router, and

said index includes said identifier of said tunnel; and

access said ACL using said index.

30. (**Currently Amended**) A computer program product, wherein said computer program product comprises a non-transitory computer-readable storage medium, and further comprising:

a plurality of instructions, comprising

a first set of instructions, executable on a computer system, configured to

assign a security group identifier (SGI) to a packet, wherein

said first set of instructions are further configured to assign said

SGI based, at least in part, on a security group of a sender of said packet,

said SGI identifies said security group.

said security group is configured to represent a plurality of senders, and

said plurality of senders comprises said sender,

a second set of instructions, executable on said computer system, configured to classify said packet based, at least in part, on said SGI,

a third set of instructions, executable on said computer system, configured to determine a routing of said packet, wherein said determining said routing is based, at least in part, on said SGI, and

said third set of instructions comprises

a first subset of instructions, executable on said computer system, configured to identify a tunnel,

a fourth set of instructions, executable on said computer system,
configured to determine whether forwarding said packet via said tunnel is permitted, wherein
said fourth set of instructions are further configured to use said SGI, and

a **fourth fifth** set of instructions, executable on said computer system, configured to forward said packet via said tunnel, if said forwarding ~~a packet having said SGI~~ said packet via said tunnel is permitted; and

said computer-readable storage medium, wherein said instructions are encoded in said computer-readable storage medium.

31. (Currently Amended) The computer program product of claim 30, wherein

 said second set of instructions is further configured to generate a classification of
 said packet, and

~~further comprising: a fifth said fourth set of instructions, executable on said computer system, are further configured to determine whether said packet can be sent via a tunnel based on use~~ said classification.

32.-33. (Cancelled)

34. (Currently Amended) The computer program product of claim 31, wherein said ~~fifth fourth~~ set of instructions comprises:

 a first subset of instructions, executable on said computer system, configured to generate an index, wherein said index comprises said SGI; and
 a second subset of instructions, executable on said computer system, configured to use said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via a tunnel.

35. (Original) The computer program product of claim 34, wherein said information comprises:

 an SGI field; and
 a tunnel identifier field.

36. (Currently Amended) The computer program product of claim 30,
~~further comprising: a fifth set of instructions, executable on said computer system, configured to wherein~~
~~said fifth set of instructions are further configured to~~ forward said packet from
an ingress router to an egress router via [[a]] said tunnel.

37. (Previously Presented) The computer program product of claim 36,
further comprising:
a sixth set of instructions, executable on said computer system, configured to
receive said packet at said egress router; and
a seventh set of instructions, executable on said computer system, configured to
determine whether said packet can be forwarded by said egress router
based on said SGI.

38. (Currently Amended) The computer program product of claim 37,
wherein said seventh set of instructions comprises:
a first subset of instructions, executable on said computer system, configured to
determine whether said packet can be forwarded by said egress router
based, at least in part, on said SGI, a destination of said packet, and an
identifier of said tunnel.

39. (Previously Presented) The computer program product of claim 37,
wherein said seventh set of instructions comprises:
a first subset of instructions, executable on said computer system, configured to
generate an index into an access control list (ACL), wherein
said ACL comprises information regarding whether said packet can be
forwarded by said egress router, and
said index includes said identifier of said tunnel; and
a second subset of instructions, executable on said computer system, configured
to access said ACL using said index.

40. **(Currently Amended)** An apparatus comprising:

a processor;

a memory, coupled to the processor;

means for assigning a security group identifier (SGI) to a packet, wherein

 said means for assigning said SGI is configured to assign said SGI based,

at least in part, on a security group of a sender of said packet,

said SGI identifies said security group,

said security group is configured to represent a plurality of senders,

and

said plurality of senders comprises said sender;

means for classifying said packet based, at least in part, on said SGI, wherein

 said means for classifying is coupled to said means for assigning, and

 said means for classifying comprises the memory;

means for determining a routing of said packet, wherein

 said means for determining said routing comprises the processor, and

 said means for determining said routing is configured to use determine

said routing based, at least in part, on said SGI in-determining

said routing, and

said determining said routing comprises

identifying a tunnel;

means for determining whether forwarding said packet via said tunnel is

permitted, wherein

said means for determining whether said forwarding is permitted is

configured to make a determination as to whether said

formatting is permitted based, at least in part, on said SGI; and

means for forwarding said packet via [[a]] said tunnel identified by said routing,

 if said forwarding a packet having said SGI said packet via said tunnel

 is permitted, wherein

 said means for forwarding is coupled to said means for determining.

41. (Currently Amended) The apparatus of claim 40, ~~further comprising:~~
~~means for wherein~~
said means for determining whether ~~said packet can be sent via a tunnel on~~
~~said forwarding is permitted is configured to make a determination as~~
~~to whether said formatting is permitted~~ based, at least in part, on a
result generated by said means for classifying said packet.

42. (Cancelled)

43. (Cancelled)

44. (Currently Amended) The apparatus of claim 41, wherein said means
for determining whether said forwarding is permitted comprises:
means for generating an index, wherein said index comprises said SGI; and
means for using said index to access an access control list (ACL), wherein said
ACL includes information as to whether said packet can be sent via [[a]]
said tunnel.

45. (Original) The apparatus of claim 44, wherein said information
comprises:
an SGI field; and
a tunnel identifier field.

46. (Previously Presented) The apparatus of claim 40, wherein
said means for forwarding said packet is configured to forward said packet from
an ingress router to an egress router via said tunnel.

47. (Original) The apparatus of claim 46, further comprising:
means for receiving said packet at said egress router; and
means for determining whether said packet can be forwarded by said egress router
based on said SGI.

48. **(Currently Amended)** The apparatus of claim 47, wherein said means for determining whether said packet can be forwarded by said egress router further comprises:

means for determining whether said packet can be forwarded by said egress router based, at least in part, on said SGI, a destination of said packet, and an identifier of said tunnel.

49. **(Currently Amended)** The apparatus of claim 47, wherein said means for determining whether said packet can be forwarded by said egress router further comprises:

means for generating an index into an access control list (ACL), wherein said ACL comprises information regarding whether said packet can be forwarded by said egress router, and said index includes said identifier of said tunnel; and means for accessing said ACL using said index.